

IN THE CLAIMS:

1 1. (Currently Amended) A semiconductor laser device comprising:
2 a plurality of laser light oscillators that each emit a laser beam from an outlet
3 thereof; and
4 a diffraction grating that ~~at least partially reflects, scatters, or~~ transmits a laser
5 beam that is oscillated in at least one of the laser light oscillators and is emitted from an outlet
6 thereof, so that a portion of the laser beam is incident on at least one of the other laser light
7 oscillators ~~to enable phase locking~~.

1 2. (Previously Presented) The semiconductor laser device according to Claim 1,
2 wherein the plurality of laser light oscillators are included in a semiconductor
3 laser array element, and
4 the diffraction grating is disposed so as to face the outlet of the at least one of the
5 laser light oscillators, the diffraction grating being a translucent member that (a) partially
6 transmits the laser beam and (b) partially reflects or scatters the laser beam so that a portion of
7 the laser beam is directed to the at least one of the other laser light oscillators.

1 3. (Previously Presented) The semiconductor laser device according to Claim 1,
2 wherein the plurality of laser light oscillators are included in a plurality of
3 semiconductor laser array elements in such a manner that at least two laser light oscillators are
4 included in each laser light oscillator in an array, the plurality of semiconductor laser array
5 elements being stacked up, and
6 the diffraction grating is disposed so as to face the outlet of the at least one of the
7 laser light oscillators included in one of the semiconductor laser array elements, the diffraction

8 grating being a translucent member that (a) partially transmits the laser beam and (b) partially
9 reflects or scatters the laser beam so that a portion of the laser beam is directed to the at least one
10 of the other laser light oscillators included in the other semiconductor laser array elements.

1 4. (Previously Presented) The semiconductor laser device according to Claim 1,
2 wherein a reflecting optical path, a scattering optical path, and a transmitting
3 optical path of the diffraction grating are directed to the outlet of the at least one of the other
4 laser light oscillators, thereby the portion of the laser beam is directed in a vicinity of an optical
5 axis of the laser beam at the outlet of the at least one of the other laser light oscillators.

1 5. (Previously Presented) The semiconductor laser device according to Claim 2,
2 wherein the diffraction grating is a flat plate having a main surface that is either a
3 flat plane or a scabrous plane, the main surface being an incidence plane of the laser beam, and
4 the ~~optical element~~ diffraction grating partially reflects or scatters the laser beam on the main
5 surface.

1 6. (Previously Presented) The semiconductor laser device according to Claim 3,
2 wherein the diffraction grating is a flat plate having a main surface that is either a
3 flat plane or a scabrous plane, the main surface being an incidence plane of the laser beam, and
4 the diffraction grating partially reflects or scatters the laser beam on the main surface.

1 7. (Previously Presented) The semiconductor laser device according to Claim 2,
2 wherein the diffraction grating is a flat plate which includes the diffraction grating
3 on a main surface thereof, the main surface being an incidence plane of the laser beam, and the

4 flat plate partially diffracts the laser beam on the diffraction grating at a predetermined angle
5 when the diffraction grating partially reflects the laser beam.

1 8. (Previously Presented) The semiconductor laser device according to Claim 3,
2 wherein the diffraction grating is a flat plate which includes a diffraction grating
3 on a main surface thereof, the main surface being an incidence plane of the laser beam, and the
4 flat plate partially diffracts the laser beam on the diffraction grating at a predetermined angle
5 when the diffraction grating partially reflects the laser beam.

1 9. (Previously Presented) The semiconductor laser device according to Claim 7,
2 wherein the diffraction grating directs -1st order diffracted light and +1st order
3 diffracted light generated when the laser beam is partially diffracted, so as to be respectively
4 incident on laser light oscillators that are adjacent to the at least one of the laser light oscillators
5 from which the laser beam has been emitted.

1 10. (Previously Presented) The semiconductor laser device according to Claim 8,
2 wherein the diffraction grating directs -1st order diffracted light and +1st order
3 diffracted light generated when the laser beam is partially diffracted, so as to be respectively
4 incident on laser light oscillators that are adjacent to the at least one of the laser light oscillators
5 from which the laser beam has been emitted.

1 11. (Previously Presented) The semiconductor laser device according to Claim 2,
2 wherein the diffraction grating has been subjected to hologram processing so as to
3 function as a hologram to condense or collimate a portion of the laser beam that has transmitted
4 therethrough.

1 12. (Previously Presented) The semiconductor laser device according to Claim 3,
2 wherein the diffraction grating has been subjected to hologram processing so as to
3 function as a hologram to condense or collimate a portion of the laser beam that has transmitted
4 therethrough.

1 13. (Previously Presented) The semiconductor laser device according to Claim 2,
2 wherein the plurality of laser light oscillators each have two outlets, from one of
3 which the laser beam is emitted to be reflected, scattered, or diffracted by the optical element,
4 and from the other of which the laser beam is emitted from the semiconductor laser array
5 element,
6 the diffraction grating is disposed so as to face the one outlet of each of the laser
7 light oscillators, and reflects, scatters, or diffracts the laser beam.

1 14. (Previously Presented) The semiconductor laser device according to Claim 3,
2 wherein the plurality of laser light oscillators each have two outlets, from one of
3 which the laser beam is emitted to be reflected, scattered, or diffracted by the diffraction grating,
4 and from the other of which the laser beam is emitted from the semiconductor laser array
5 element,
6 the diffraction grating is disposed so as to face the one outlet of each of the laser
7 light oscillators, and reflects, scatters, or diffracts the laser beam.

1 15. (Original) The semiconductor laser device according to Claim 3,
2 wherein the plurality of semiconductor laser array elements respectively include
3 substrate layers that have been cut out of one semiconductor wafer.

1 16. (Previously Presented) The semiconductor laser device according to Claim 2,
2 wherein the plurality of oscillators are in a single array and each has a real
3 refractive index guided self-aligned structure.

1 17. (Original) The semiconductor laser device according to Claim 3
2 wherein the plurality of semiconductor laser array elements each have a real
3 refractive index guided self-aligned structure.

1 18. (Original) A multiple wavelength laser light emitting apparatus, comprising:
2 a plurality of semiconductor laser devices that each emits a plurality of laser
3 beams, wavelengths of the laser beams emitted from each semiconductor laser device being
4 different from wavelengths of the laser beams emitted from a different semiconductor laser
5 device; and
6 an optical element that condenses a plurality of laser beams emitted from each of
7 the plurality of semiconductor laser devices at a predetermined position,
8 wherein at least one of the semiconductor laser devices is the semiconductor laser
9 device described in Claim 1.

1 19. (Original) The multiple wavelength laser light emitting apparatus according to
2 Claim 18, further comprising:
3 an adjusting means for adjusting a position at which the plurality of laser beams
4 emitted from each of the plurality of semiconductor laser devices are condensed, by driving the
5 optical element;

6 a laser driving means for selecting a semiconductor laser device that emits laser
7 beams each having a designated wavelength, out of the plurality of semiconductor laser devices,
8 and driving the selected semiconductor laser device; and

9 a control means for controlling the adjusting means in accordance with a
10 wavelength of the laser beams to be emitted.

1 20-28. (Cancelled)

1 29. (Currently Amended) A semiconductor laser device comprising;

2 a plurality of laser light oscillators that each emit a laser beam from a respective
3 outlet; and

4 ~~an optical element~~ a diffraction grating that at least partially directs a sufficient
5 portion of a laser beam from the plurality of laser light oscillators to enter another of the plurality
6 of laser light oscillators to enable a phase locking of the respective laser light oscillators while
7 transmitting the remaining portion of the laser beam, when the respective outlets of the laser light
8 oscillators are aligned with the ~~optical element~~ diffraction grating to enable each one of the laser
9 light oscillators to receive at least a portion of the laser beam from another of the plurality of
10 laser light oscillators to enable a phase locking of each one of the plurality of laser light
11 oscillators.

1 30. (Cancelled)

1 31. (Previously Presented) The semiconductor laser device according to Claim 29
2 wherein the optical element is a flat plate.

1 32. (Previously Presented) The semiconductor laser device according to Claim 29
2 wherein the optical element includes a hologram to collimate portions of the laser beams
3 transmitted therethrough.

1 33. (Previously Presented) The semiconductor laser device according to Claim 29
2 wherein the laser light oscillators each have a refractive index guided self-aligned structure and
3 are arranged parallel to each other.

1 34. (Previously Presented) The semiconductor laser device according to Claim 33
2 wherein each of the laser light oscillators include GaInP/AlGaInP quantum well active layers.

1 35. (Previously Presented) The semiconductor laser device according to Claim 29
2 wherein the optical element directs between 10% to 30% of the incident laser beam to enter other
3 laser light oscillators.

1 36. (Previously Presented) The semiconductor laser device according to Claim 29
2 wherein the optical element directs the sufficient portion of the laser beam at an optical axis of
3 another laser light oscillator.

1 37. (Previously Presented) The semiconductor laser device according to Claim 29
2 wherein the optical element is a diffraction grating with vertical and horizontal grooves that cross
3 each other.

1 38. (Previously Presented) The semiconductor laser device of Claim 29 wherein the
2 plurality of laser light oscillators are arranged in a plurality of arrays, each array includes a plural
3 number of laser light oscillators, the arrays are vertically stacked and the optical element

4 partially directs a sufficient portion of a plurality of laser beams from each array to enter laser
5 light oscillators of other stacked arrays to enable a phase locking of all of the laser light
6 oscillators.

1 39. (New) A semiconductor laser device comprising;

2 a plurality of laser light oscillators that each emit a laser beam from a respective
3 outlet; and

4 means for phase locking the respective plurality of laser light oscillators including
5 an optical element that at least partially directs a sufficient portion of a laser beam from the
6 plurality of laser light oscillators to enter another of the plurality of laser light oscillators to
7 enable a phase locking of the respective laser light oscillators, when the respective outlets of the
8 laser light oscillators are aligned with the optical element to enable each one of the laser light
9 oscillators to receive at least a portion of the laser beam from another of the plurality of laser
10 light oscillators to enable a phase locking of each one of the plurality of laser light oscillators.

1 40. (New) A semiconductor laser device comprising;

2 a plurality of laser light oscillators that each emit a laser beam from a respective
3 outlet; and

4 an optical element transmits, through the optical element, a major portion of a
5 laser beam from the plurality of laser light oscillators and at least partially directs, apart from the
6 transmission of the major portion, a sufficient portion of a laser beam from the plurality of laser
7 light oscillators to enter another of the plurality of laser light oscillators to enable a phase locking
8 of the respective laser light oscillators, when the respective outlets of the laser light oscillators
9 are aligned with the optical element to enable each one of the laser light oscillators to receive at

- 10 least a portion of the laser beam from another of the plurality of laser light oscillators to enable a
- 11 phase locking of each one of the plurality of laser light oscillators.